Performance Analysis
of
Price Anderson Amendment Act (PAAA) Non-Compliance Tracking System (NTS) and Occurrence Reporting and Processing System (ORPS) Reportable Incidents
Fiscal Year (FY) 2007 3rd Quarter
(July 1, 2006 – June 30, 2007)

Report No. 15

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INTRODUCTION

As part of its oversight program required by DOE Order 226.1, *Implementation of Department of Energy Oversight Policy*, LBNL identifies operational events, accidents and injuries in order to analyze and trend incidents to determine areas of needed improvement and to ensure the effectiveness of corrective actions to mitigate events and identify recurring events. The Occurrence Reporting Process System (ORPS) performance analysis satisfies the quarterly analysis and trending requirement in DOE Order 231.1A, *Environment, Safety, and Health Reporting*.

This analysis report addresses PAAA NTS- and ORPS-reportable incidents that were identified through the FY07 3rd Quarter reporting period, which is defined as July 1, 2006 through June 30, 2007. Hereafter, any reference to the "FY07 3rd Quarter reporting period" means July 1, 2006 through June 30, 2007.

ANALYSIS METHODOLOGY

The methodology for data analysis of Price Anderson Amendment Act (PAAA) Non-Compliance Tracking System (NTS) - and ORPS-reportable incidents based on the requirements outlined in LBNL/PUB-5519 (3), *Data Monitoring and Analysis Program Manual*, which is part of the institutional Issues Management Program. The Issues Management Program satisfies the data analysis requirements outlined in DOE O 226.1, *Implementation of Department of Energy Oversight Policy*, and DOE O 231.1A, *Environment, Safety and Health Reporting*, to identify recurring events and prevent more serious events from occurring.

Data analysis reports will be in graphical format, typically runs charts, controls charts and/or Pareto charts in accordance with LBNL/PUB-5519 (3) and will include the analysis of the data for the specified reporting period. This methodology is consistent with the guidance outlined in DOE G 231.1-1, *Occurrence Reporting and Performance Analysis Guide*, Attachment 6, *ORPS Performance Analysis Analytical Techniques*.

Statistical industry standards will be used to identify trends, adverse or otherwise, when analyzing ORPS and PAAA NTS reportable incidents. Based on an existing or potential trend, additional data will be monitored and analyzed to determine the cause of the trend, identify recurring events, and identify adverse conditions that require corrective actions, as applicable.

A statistical trend is defined as:

- One point outside the control limits;
- Two out of three points within two standard deviations above or below the baseline average;
- Four out of five points within one standard deviation above or below the baseline average;
- Seven points in a row above or below the baseline average; or
- Seven points in a row that are increasing or decreasing

The control chart is used to determine if the number of ORPS- and PAAA NTS-reportable incidents is within an acceptable statistical threshold and if statistical trends are present.

Pareto charts further break down the data by looking at various combinations of source data to determine the major contributions, the distribution of the contributors, and recurring issues. The cumulative data are reviewed, as appropriate, by:

- Trend Code, identified in Attachment 2, which will reveal common causes in dissimilar events
- Division, the organization that contributed to the event/incident
- Report type, ORPS or PAAA NTS
- Subject matter, the primary focus of the event/incident
- Circumstances surrounding the event/incident

This report will typically display the Pareto chart by trend code. The data that contributes to the majority of the instances in a particular trend code is then reviewed for commonalities. Additional Pareto charts will be included, if warranted. If a potential issue is identified during analysis of the data, the appropriate management and Subject Matter Experts (SMEs) will be contacted.

When statistical analysis and distribution analysis indicate the possibility of a recurrent event, the Office of Contract Assurance (OCA) reviews the subject events with the SMEs.

Where incidents are required to be reported to more than one reporting system, they are counted as only one incident. For example, an incident that is PAAA and ORPS reportable is considered only one incident even though it was required to be reported to two systems.

EXECUTIVE SUMMARY

During this reporting period, thirty-six incidents were analyzed, twelve PAAA NTS-reportable incidents and twenty-four ORPS-reportable incidents. However, of these incidents six were found to be both PAAA NTS- and ORPS-reportable incidents. Therefore, these six incidents were considered only one incident resulting in the actual number of incidents, totaling thirty.

Analysis of ORPS reportable incidents determined that the number of incidents met or exceeded the upper control limit (UCL) in June 2007. This indicates an adverse statistical trend that warrants further analysis. During this reporting period, six electrical ORPS reports were generated, and during the previous reporting period another electrical ORPS report was generated in June 2006. Although these issues were distributed among different divisions, it was determined that the majority of them share a common cause, specifically Trend Code "H. Work Planning Needs Improvement/Less than Adequate". Based on this analysis, there is evidence of a recurring event. This analysis has been discussed with the LBNL ORPS Coordinator, and LBNL will generate an ORPS Category R (Recurring Occurrences) report as a result.

1.0 ORPS REPORTABLE INCIDENTS

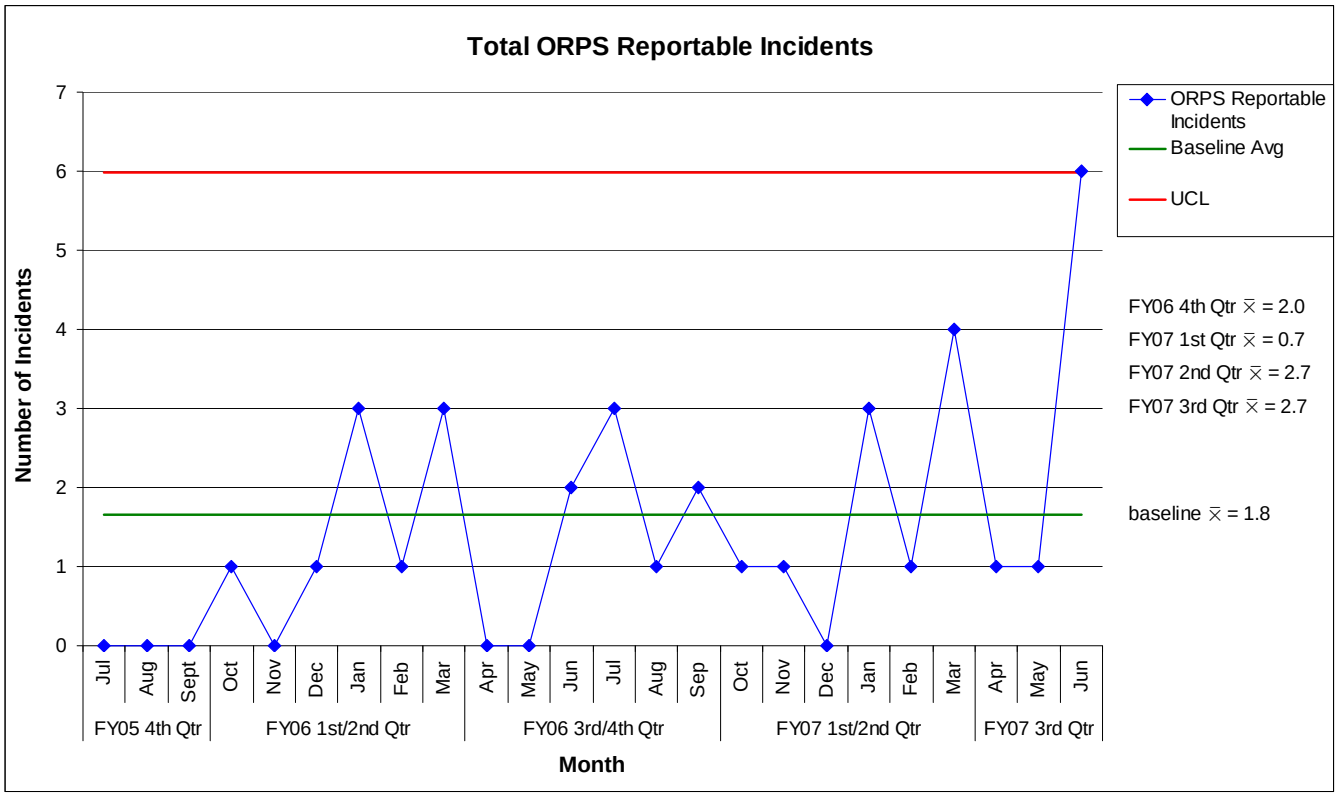

Figure 1.1

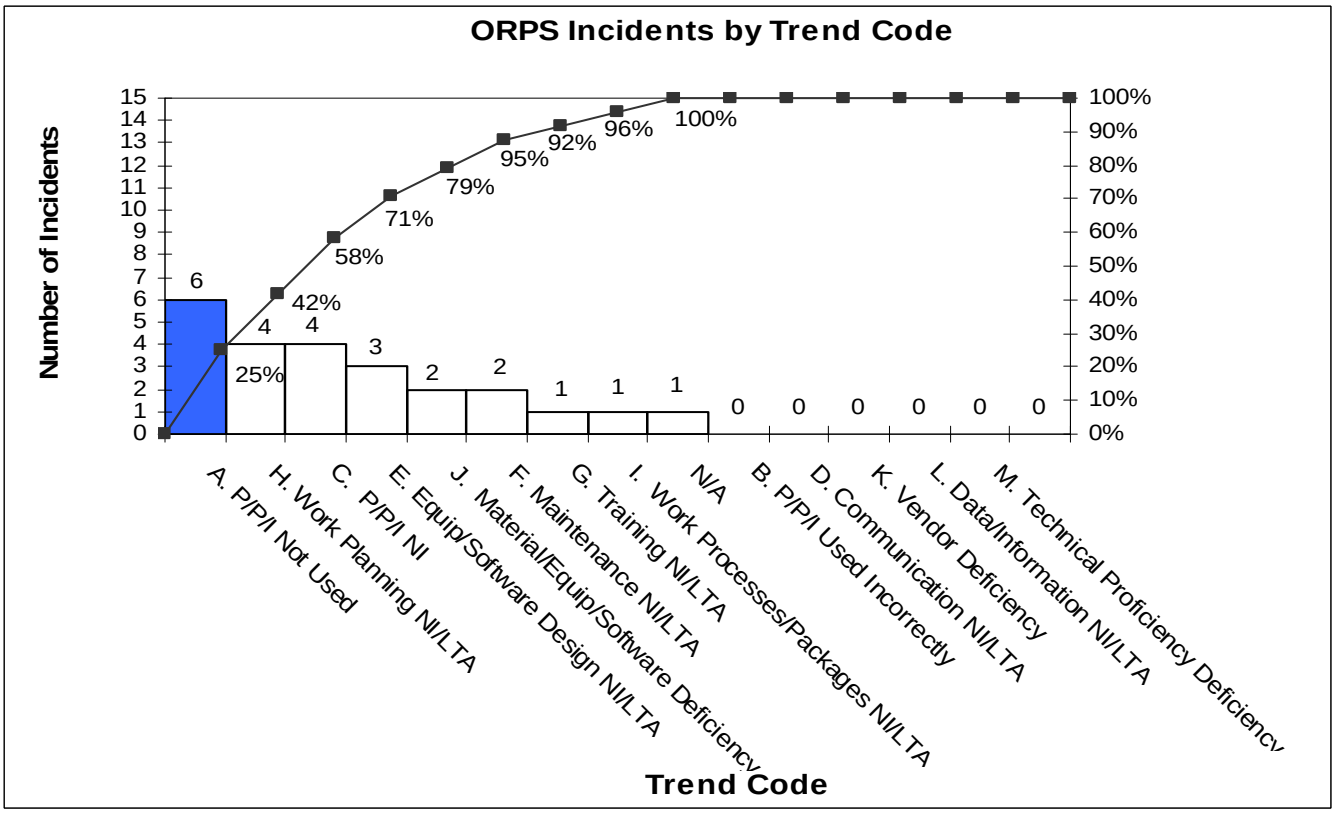

Figure 1.2

Analysis:

The total number of ORPS reports during FY07 3rd Quarter reporting period is 24, an increase over the 15 reports identified during the FY07 2nd Quarter reporting period (April 1, 2006 through March 31, 2007).

Figure 1.1 identifies the upper control limit (UCL), which is three standard deviations above the baseline mean, for ORPS reportable incidents is 5.99. In June 2007, an adverse statistical trend was detected when the number of incidents met or exceeded the UCL. The data was broken down and analyzed to determine the cause of the statistical trend. This determined that during the current reporting period, six electrical ORPS reports were generated: ORPS-SC-BSO-LBL-OPER-2006-0006 (July 2006), ORPS-SC-BSO-LBL-OPER-2006-0004 (September 2006), ORPS-SC-BSO-LBL-ENG-2007-0002 (February 2007); ORPS-SC-BSO-LBL-OPER-2007-0002 (March 2007); and ORPS-SC-BSO-LBL-EED-2007-0001 (June 2007). Additionally, the month preceding the start of the FY07 3rd Quarter reporting period, a similar electrical ORPS report (ORPS-SC-BSO-LBL-ENG-2006-0001, June 2006) was identified. Therefore, this was included in the data analysis of the electrical ORPS reports. Review of the ORPS report details and discussions with the SMEs determined that the majority of them shared a common cause, specifically Trend Code "H. Work Planning Needs Improvement/Less than Adequate". Based on this analysis, there is evidence of a recurring event.

The Pareto Chart indicates that six of the twenty-four incidents were categorized as trend code "A. Policy/ Procedures/Instructions Not Used". 50% of these incidents represent three instances specific to notices of violation from external regulatory agencies, which differ with regard to circumstances. The incidents were specific to shipment of hazardous waste from an onsite to offsite location without a manifest, medical waste and container requirements noncompliances, and training in accordance with the RCRA Permit. The other three events share no commonalities. Review of the division, subject matter, and circumstances determined that no evidence of a recurring issue exists in this area.

2.0 PAAA NTS REPORTABLE INCIDENTS

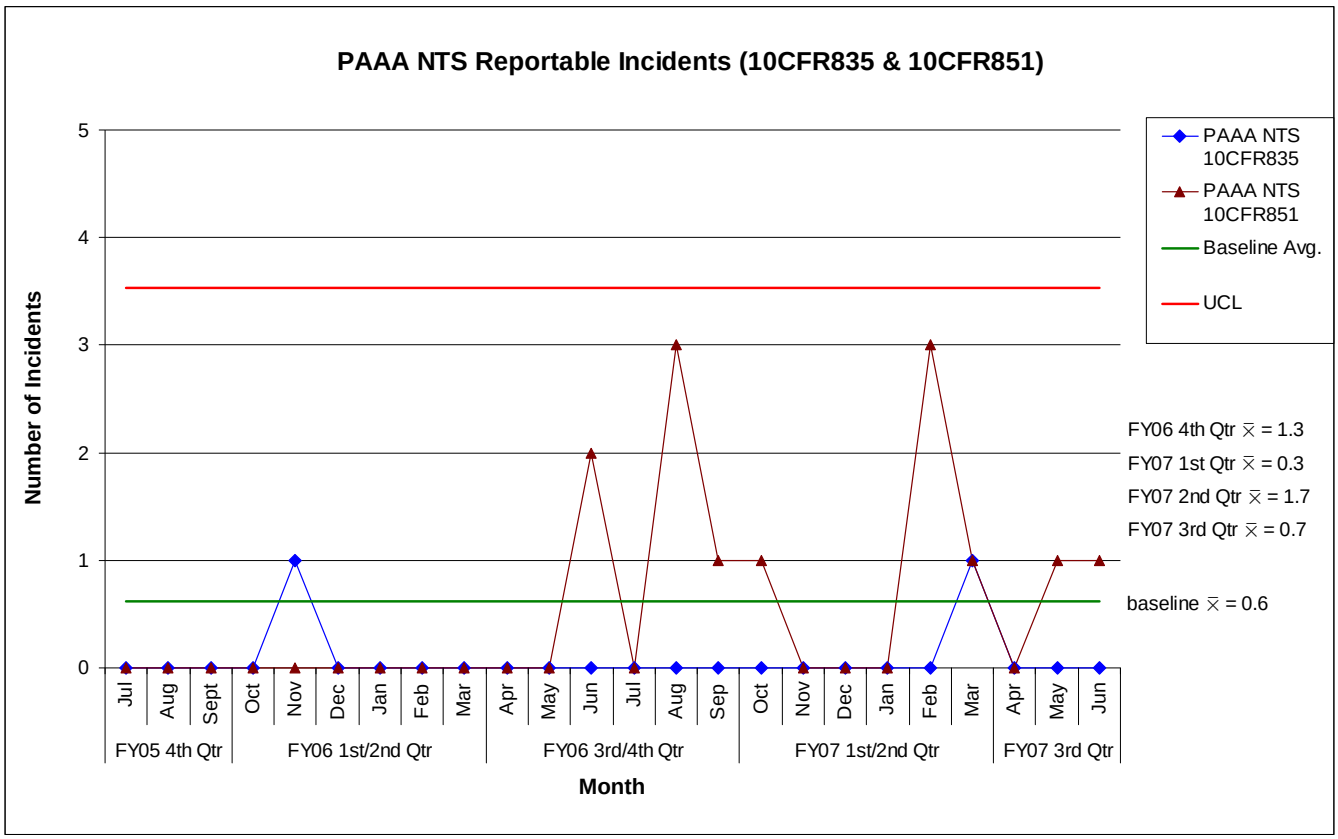

Figure 2.1

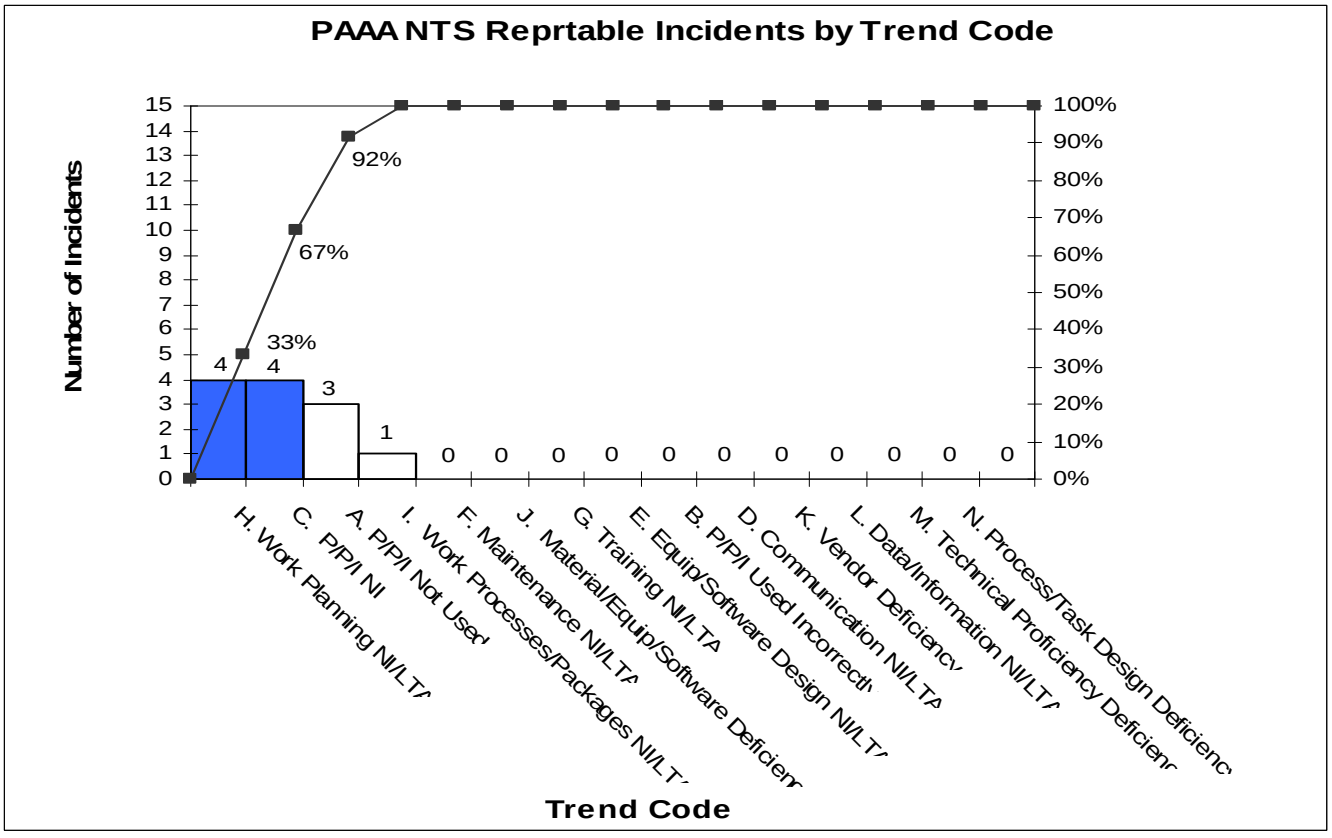

Figure 2.2

Analysis

While represented on Figure 2.1, six 10CFR851 PAAA NTS Reportable Incidents are duplicates of ORPS reportable Incidents. (See Attachment 1 for details on duplicate incidents.) The two 10CFR851 NTS-reportable incidents identified in May and June were specific to lead exposure and an electrical shock received by a student while at an offsite work location. Based on the statistical analysis, it has been determined that no statistical trend for the FY07 3rd Quarter reporting period exists among PAAA reports.

Figure 2.2 indicates the majority of incidents are evenly categorized within two trend codes; “H. Work Planning Needs Improvement/Less than Adequate” and “C. Policies/Procedures/Instructions Need Improvement”. Review of the division, subject matter, and circumstances determined that no evidence of a recurring issue exists in these areas.

Four incidents were categorized as “H. Work Planning Needs Improvement/Less than Adequate” (Figure 2.3). Two of the incidents were specific to fall protection. However, the first incident identified in August 2006 was an isolated incident. Similar incidents occurred during the following months, and in October 2006 LBNL identified a programmatic issue with fall protection on roofs. The other two incidents shared no commonalities.

Four incidents were categorized as “C. Policies/Procedures/Instructions Need Improvement” Two of the incidents are specific to the Job Hazard Analysis program being less than adequate and lack of an approval process for non-National Recognized Testing Laboratories (NTRL) electrical equipment. The other two incidents shared no commonalities.

3.0 ORPS AND PAAA NTS REPORTABLE INCIDENTS

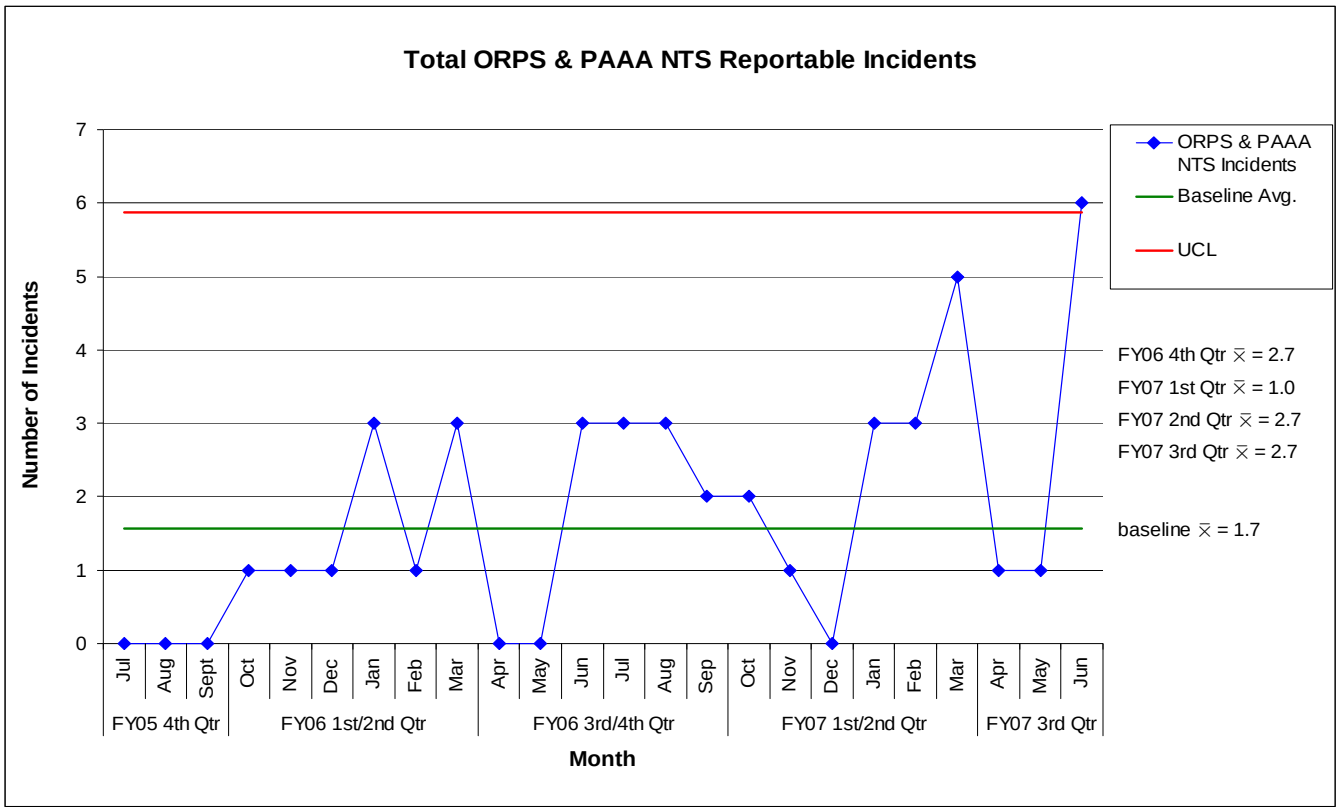

Figure 3.1

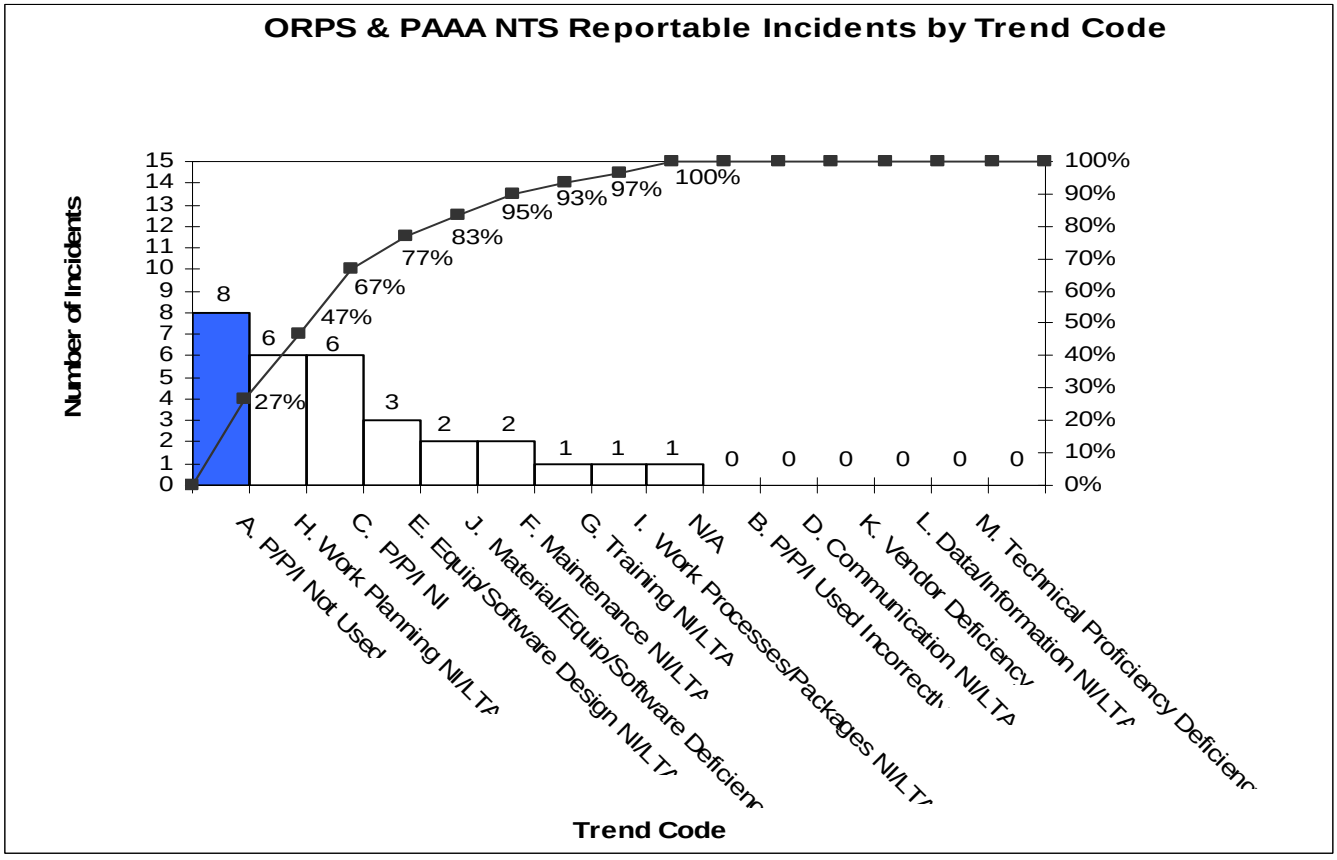

Figure 3.2

Analysis:

During this reporting period, six ORPS and PAAA NTS-reportable incidents were duplicated. (See Attachment 1 for details on duplicate incidents.) The number of total incidents increased from twenty-one to thirty from the FY07 2nd Quarter reporting period (April 1, 2006 through March 31, 2007) to the FY07 3rd Quarter reporting period.

Figure 3.1 identifies the upper control limit (UCL), which is three standard deviations above the baseline mean, for ORPS reportable incidents is 5.99. In June 2007, an adverse statistical trend was detected when the number of incidents met or exceeded the UCL. The data was broken down and analyzed to determine the cause of the statistical trend. This determined that during the current reporting period, six electrical ORPS reports were generated: ORPS-SC-BSO-LBL-OPER-2006-0006 (July 2006), ORPS-SC-BSO-LBL-OPER-2006-0004 (September 2006), ORPS-SC-BSO-LBL-ENG-2007-0002 (February 2007); ORPS-SC-BSO-LBL-OPER-2007-0002 (March 2007); and ORPS-SC-BSO-LBL-EED-2007-0001 (June 2007). Additionally, the month preceding the start of the FY07 3rd Quarter reporting period, a similar electrical ORPS report (ORPS-SC-BSO-LBL-ENG-2006-0001, June 2006) was identified. Therefore, this was included in the data analysis of the electrical ORPS reports. Review of the ORPS report details and discussions with the SMEs determined that the majority of them shared a common cause, specifically Trend Code "H. Work Planning Needs Improvement/Less than Adequate". Based on this analysis, there is evidence of a recurring event.

The Pareto Chart indicated that eight of the incidents were categorized as trend code "A. Policy/ Procedures/Instructions Not Used". Three of these incidents were specific to notices of violation from external regulatory agencies, which differ with regard to circumstances. The incidents were specific to shipment of hazardous waste from an onsite to offsite location without a manifest, medical waste and container requirements noncompliances, and training in accordance with the RCRA Permit. The other five incidents share no commonalities. Review of the division, report type, subject matter, and circumstance determined that no evidence of a recurring issue exists in this area.

ATTACHMENT 1 – ORPS AND PAAA NTS REPORTABLE INCIDENTS FOR 4/1/07 – 3/30/07

Item	Title	Report #	FY	Disc. Date	PAAA Duplicates
1.	Misidentified source of electrical power during precautionary investigation and core drilling	ORPS: OPER-06-06	FY06	24-Jul	
2.	Trip injury/fracture of foot bone from loss of balance	ORPS: CRD-06-01	FY06	27-Jul	
3.	Management concern from fall in building 58A	ORPS-ENG-06-02	FY06	28-Jul	
4.	Employee slips on stairs, breaks arm	ORPS-ICSD-06-01	FY06	8-Aug	
5.	Inadequate Fall Protection on Roof	NTS: EHS-06-05	FY06	8-Aug	
6.	Scaffold Fall Hazard	NTS: EHS-06-04	FY06	11-Aug	
7.	B55A LOTO violation	ORPS: OPER-06-04	FY06	5-Sep	NTS: EHS-06-06
8.	Employee breaks elbow at Building 66	ORPS: OPER-06-05	FY06	15-Sep	
9.	Employee suicide/fall from upper floor	ORPS: PHY-06-01	FY06	18-Oct	
10.	Fall Protection Program LTA	NTS: EHS-06-07	FY07	6-Oct	
11.	Management Concern due to Penetration Permit Incidents	ORPS: OPER-06-07	FY07	29-Nov	NTS: EHS-06-03
12.	Discovery of suspect/counterfeit pipe fittings and steel pipe	ORPS: OPER-07-01	FY07	18-Jan	
13.	Potential Exposure to Nitric and Hydrofluoric Acid Vapor	ORPS: MSD-07-01	FY07	23-Jan	
14.	B58A-102 ground penetration permit administrative error	ORPS: ENG-07-01	FY07	30-Jan	
15.	Electrical Equipment AHJ Approval Program (NEC 110.2) LTA	NTS: EHS-07-02	FY07	6-Feb	
16.	Job Hazard Analysis (JHA)Program Implementation LTA	NTS: EHS-07-01	FY07	23-Feb	
17.	Building 88 Vault 115volt electrical shock	ORPS: ENG-07-02	FY07	26-Feb	NTS: EHS-07-03
18.	Use of Non-DOELAP Dosimeter	NTS: EHS-07-04	FY07	7-Mar	
19.	LOTO violation results in near miss	ORPS: OPER-07-02	FY07	23-Mar	NTS: EHS-07-05
20.	Class II Violations of RCRA Part B Permit	ORPS: EHS-07-01	FY07	27-Mar	
21.	DTSC consent order/ fines	ORPS: EHS-07-02	FY07	29-Mar	
22.	Management Concern for Penetration Permit Violation	ORPS: OPER-07-03	FY07	30-Mar	
23.	Management concern involving vendor working on electrically energized equipment	ORPS: MSD-07-02	FY07	6-Apr	
24.	Employee broke leg falling off personal transporter (Segway)	ORPS: EHS-07-03	FY07	18-May	
25.	B71 Lead Air Sample Level Exceeds OSHA limit	ORPS: OPER-07-04	FY07	4-Jun	NTS: EHS-07-06
26.	Department of Health Services Notice of Violations	ORPS: EHS-07-04	FY07	14-Jun	
27.	Sanitary sewer overflow (SSO) on site	ORPS: OPER-07-05	FY07	25-Jun	
28.	Sanitary sewer overflow (SSO) on site	ORPS: OPER-07-06	FY07	26-Jun	
29.	Employee slipped and fell on wet floor	ORPS: LSD-07-01	FY07	27-Jun	
30.	Student assistant received electrical shock	ORPS: EED-07-01	FY07	29-Jun	NTS: TBD

ATTACHMENT 2 – TREND CODES

Trend Code
A. Policies/Procedures/Instructions Not Used
B. Policies/Procedures/Instructions Used Incorrectly
C. Policies/Procedures/Instructions Need Improvement
D. Communication Needs Improvement /Less Than Adequate
E. Equipment/Software Design Needs Improvement /Less Than Adequate
F. Maintenance Needs Improvement /Less Than Adequate
G. Training Needs Improvement /Less Than Adequate
H. Work Planning Needs Improvement /Less Than Adequate
I. Work Processes/Packages Need Improvement /Less Than Adequate
J. Material/Equipment/Software Deficiency
K. Vendor Deficiency
L. Data/Information Needs Improvement /Less Than Adequate
M. Technical Proficiency Deficiency
N. Process/Task Design Deficiency